U of Chicago, Master of Computer Sciense
Please limit your responses to the following essay questions to 300 or fewer words.

- 1. Please describe your career goals, both short and long term.

  My short term career goal is to become a data analyst in a company, but I plan to work my way up to a big company, such as the Chicago Board Option Exchange (CBOE), Facebook or Apple. I enjoy making intelligent decisions after analyzing huge sets of data. After I gain experience for a couple of years, my next step is to become a technology consultant in consulting firms, such as Accenture and McKinsey. After collecting experience and building connections, I see myself running my own business in ten years, by starting a technology company that create meaningful and memorable products. My ambition is to simplify machine learning so that it is accessible to the general public and contributes to artificial intelligence.

- 2. How will earning a MS in CS from the University of Chicago help you to achieve the career goals stated above?

  Machine learning has become indispensable in this era, especially in the field of data science. With an interest in finance, I aim to become a financial data analyst who builds programs to predict the trend of the market using machine learning. This could help entities make smarter and more informed decisions in investments. Unfortunately, the college I am attending does not have ample resources and environments in machine learning. University of Chicago, on the other hand, has the machine learning research group led by experienced professors that I long to attain knowledge from. I am intrigued by Professor Amit's works on "Speech and Shape Recognition", which provide insights on machine learning.

  Moreover, the thorough curriculum of the 12-course master program will fill the gaps in my knowledge of computer science. As I was interviewed by twitter and other companies, they noticed that I could efficiently write optimized codes for the areas that I am proficient in, such as C++. However, I could not give flawless answers for some of the questions, such as query language in database, since my computer engineering major does not go into depth in those subjects. Nevertheless, the 12-course program includes all the essential courses from which I will develop the vital skills to become a qualified data analyst. "Big Data" and "Advanced Data Analytics" enable me to develop a sound understanding of the meanings behind data, while the "Trading Systems Design" and "Machine Learning" will inspire me to implement my own market prediction algorithm.

  The topics of courses offered in this program greatly excite me. Furthermore, the city of Chicago has countless talents, resources and opportunities. I believe earning a MS in CS from the University of Chicago is worth my time and money. It will help me accomplish my dream and reach new heights that I never even imagined.

- 3. Describe a project, either academic or professional, that you are most proud of.

  I am currently on a project called Nat Car, where I am designing an autonomous car from scratch. We started the project by programming a microcontroller. We have a line scan camera connected to the microcontroller that detects a white track on a black background. I developed two algorithms to detect turns: one is called voltage threshold method and the other is called slope threshold method. These two methods analyze the data taken from the camera and generates outputs to control a servo motor that controls the steering wheel of the car. In order to speed up the data processing, instead of looping over the entire pixel array, I used binary search to optimized the code. This gives my car a quick reaction time.

  Since the track could be complicated, my car needs to see more of the track and preprocess data in order to keep the speed up when in a straight line and slow down in time to turn. I came up with the idea of adding one more camera in a higher position to preview the track. I utilized the Ping-Pong buffer method, which I learned from parallel programming, to store the preprocessing data and to alternate them with a current set of data.

  After I assembled the car with a printed-circuit-board that I designed with my partner, we needed to change parameters when testing. Connecting to the lap-top was time consuming and was not an ideal way to operate. To tackle with this problem, I programmed a blue tooth chip and soldered it to the board so that I could changed parameters wirelessly. We are still testing the car now. Although my team has the fastest record to run on a track, more optimizations could be done regarding the lighting condition and DC Motor control.